felt in the stomach by means of an ivory-tipped probang, Mr. Little passed an ordinary œsophageal coin-catcher, and, after several attempts, succeeded in hooking the plate, and drawing it up as far as the pharynx, where it lodged. Considerable difficulty was experienced in removing it from this situation, although this was ultimately effected, and the patient recovered without a bad symptom. The plate, which had sharp projecting extremities, measured one inch and three-quarters in length, by one inch and a quarter in width, and fixed to it were three incisor teeth, one canine, and one bicuspid. The author advocated attempts at extraction in similar cases, urging that if a foreign body has passed down the œsophagus, and through the cardiac orifices of the stomach, no great difficulty will be met with in its withdrawal through the same passage, provided no force be used; and he referred to some experiments by Mr. Pollock, to show that the removal from the stomach of even a small plate by the natural efforts is very improbable.—*Lancet*, Feb. 19th, 1870.

OPHTHALMOLOGY.

48. *Periodical Changes in the Diameter of the Pupil, without Modification of Refraction or Accommodation.*—The following interesting case of this is related by Professor DONDERS. J. K., a lad aged 18, had suffered for some weeks from an exanthem on the right half of the face, and a kind of boil beneath the nose. While being treated for this affection, the patient's vision became obscure, and mydriasis appeared, first in the left and then in the right eye; and in a few days an extraordinary inconstancy in the diameter of the pupils was observed. At first, the process ran its course regularly every twenty-four hours; at half-past seven in the morning the pupil was dilated nearly to its maximum, in a moderate light, and towards noon was reduced nearly to the size of a pin's head; so that extreme degrees both of myosis and of mydriasis were successively developed during the day. This was the account given to Dr. Donders by the patient and by his brother who accompanied him. They added that for some days the changes had been less regular, and were much less marked. Dr. Donders ascertained that, within sixteen hours, the broad diameter of the pupil became frequently twice as great as the narrow. There was absolutely no disturbance of vision to be observed; the patient was obliged to look into a mirror in order to learn the state of his pupils. The ophthalmoscope showed only strong capillary injection of the optic disk, which, indeed, is not rare as a normal state in the young. The pupils had, both in the contracted and in the dilated state, a relatively similar mobility, acting directly and together under the influence of direct light, and in accommodation to near objects. The left pupil was generally somewhat larger than the right, sometimes *vice versâ;* in both cases the difference was greater in moderate than in strong direct light, and greater also in accommodation to distant than to near objects. While the sphincter of the pupil thus seemed to act in all respects normally, no disturbance of function could be detected in the course of the third nerve; nor could there be said to be any disturbed innervation of the parts supplied by the fifth nerve. By exclusion, then, the source of the condition described had to be sought in the sympathetic; it might be assumed that in dilatation the sympathetic branch which acts on the radiating fibres of the iris was stimulated; while in contraction its action was diminished. The question now arose, whether the difference in the action of the radiating fibres had an influence either on refraction or on accommodation. A careful examination showed that, whatever the diameter of the pupil was, both refraction and accommodation remained unaltered. The patient could read for a considerable time without fatigue, with glasses of — $\frac{1}{3}$. The colour and temperature of the face and ears —which were noticed with reference to the vaso-motor function of the sympathetic—underwent little change; almost none whatever in connection with the

changes in the diameter of the pupil. There was no evidence of the presence of intestinal worms.—*Brit. Med. Journ.*, Jan. 1, 1870, from *Nederlandsch Archief voor Genees-en Natuurkunde*, Deel iv., 5e Aflever. 1869.

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49. *Endemic Hemeralopia.*—M. GALEZOWSKI having been consulted concerning several cases of hemeralopia which had occurred in the 64th Regiment of the line, and believing, as the result of ophthalmoscopic examination, that a spasmodic contraction of the arteries of the retina constituted the first stage of the pathological process, he determined to try the effect of the calabar bean, and prescribed a collyrium containing two centigrammes of eserine to ten grammes of water, dropping four drops one or more times in the eye daily. This effected a cure more rapidly than any other means in several cases in which it was tried. Upon the subject of hemeralopia in general, M. Galezowski's investigations have led him to these conclusions—1. Endemic hemeralopia is an affection of the nervous membrane, characterized by a spasmodic contraction of the arteries of the retina and its consecutive anæsthesia. In certain forms of the disease there are found grayish-white serous infiltrations, especially at the circumference of the papilla, as has been demonstrated by MM. Quaglino and Martialis, and as I have verified during this year on some of my patients. 2. This affection is generally endemic, and is observed in countries and localities where marsh fevers exert their ravages. It is also very often met with among sailors and soldiers who bivouac in humid localities. 3. Endemic hemeralopia is usually cured speedily, but it leaves a disposition to relapse in spring and autumn. M. Perreon, surgeon of the 64th Regiment, has found the same soldiers seized with hemeralopia during several successive springs. 4. The hemeralopia attacks both eyes at once, and in the same degree. 5. This form of amblyopia may be simulated by soldiers, and detection may be attended with considerable difficulty, when ophthalmoscopic phenomena are absent, as happens sometimes. Shutting them up in a completely dark room for a day or two easily induces them to abandon the attempt at deception. They become wearied out, and declare that they are cured. 6. The internal use of cod-liver oil, and fumigation by the vapours of the livers of animals directed on to the eye, have no efficacy whatever in the disease. More success is obtained from the use of purgatives and emetics, as the affection is often connected with gastric disturbance. 7. The hemeralopia which accompanies congenital or syphilitic pigmentary retinitis is permanent, while this form is transitory. The one progressively leads to complete blindness, while the other is usually followed by recovery.—*Brit. and For. Med. Chir. Rev.*, Jan. 1870, from *Gaz. des Hôpitaux*, Oct. 23d, 1869.

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50. *Influence of the Nerves in affecting Changes in the Diameter of Pupil.*—The question in what mode the two motor nerves of the iris—the oculo-motor and the sympathetic—act in effecting changes in the diameter of the pupil has recently been the subject of much careful investigation. Histologists, physiologists, and ophthalmologists have alike been interested in its solution; and conclusions differing considerably from each other have resulted from the subject having been examined in different modes and regarded from various points of view. There can be no doubt of the existence of a muscle in the substance of the iris, composed of circularly arranged fibres, usually of the unstriated variety, surrounding the pupil concentrically. By most authors, as Kölliker, Henle, Brücke, and others, the presence of a second set is admitted, occupying a place somewhat posterior to the former, and arranged in a radiating manner near the periphery of the iris. This also, in man and many other animals, consists of unstriated muscle; but in birds both sets are striated, and subject in their action to the will of the animal. A discrepancy of opinion, however, exists respecting the latter set; Grünhagen, an able microscopist, denying, on microscopic and micro-chemical grounds, that any such radiating fibres can be demonstrated in man, mammals generally, or in frogs, and maintaining that the fibres described by Henle are artificial products; he admits a sphincter, but not a dilator of the pupil. In this state of the question a fresh observer appears in the field, M. Engelhardt, who, without pursuing the anatomical

mode of investigation into detail. believes that the facts of the case may be ascertained by the method of experiment, the exciting agent being electricity. This method had already been adopted by Bernstein, and Dr. Engelhardt appears to coincide essentially with the facts arrived at by this investigator. Bernstein found that, on applying the poles of an electric battery to the opposite sides of the cornea of an eye recently removed from the body of a rabbit, dilatation of the pupil was immediately observed. By an analogous experiment, in which four electrodes were applied to the surface of the iris, contraction of the sphincter iridis could be effected, the electric stimulus acting of course, in each instance, in the direction of the length of the fibres called into action, and perpendicularly to the opposite set. And these experiments have been repeated and confirmed by Engelhardt, who adds this further proof of the existence of a dilatator pupillæ: If intense myosis be effected by the instillation of Calabar bean into one eye, irritation of the central extremity of the divided sympathetic in the neck produces no effect, for the sympathetic is paralyzed by the bean; but if a current of electricity be passed across the eye, the electrodes being placed on opposite sides of the cornea, immediate dilatation can be induced, the muscular fibres being then directly called into action. A similar proof of the existence of a dilatator was formerly furnished by Hirschmann, after the pupil had been made to contract with nicotin.

We may just add, in passing, that a paper has appeared in the last number of Schultze's Archives, by M. Dogiel, in which he states he has demonstrated, microscopically, the presence of both a dilatator and a sphincter in a consider able number of animals with the greatest certainty. These being admitted, then, the next point is to determine in what way the movements of the iris are influenced by the third nerve and the sympathetic respectively. To determine this, it seemed to be of great importance to discover how the iris behaves when both sets of fibres are either directly, or indirectly through these nerves, stimulated to the utmost extent; and this may be effected either by the application of two oppositely-charged electrodes to the fibres, or by acting on one set of the fibres with one electrode and the nerve supplying the opposite set of fibres with the other electrode, or by stimulating both nerves coincidently. When both sets of fibres were directly stimulated, the pupil retained its average diameter and circular form, or occasionally became elliptical. When one set of muscles was directly stimulated, and the other excited through the nerves, no remarkable preponderance of one over the other set was observed; but when both nerves were simultaneously excited, the action of the third was decidedly strongest, strong contraction of the pupil resulting, and it was noticed that the action of the stimulus, when applied through the nerves, was in all instances much greater than when applied directly.

In reference to the action of atropia and of Calabar bean, opinions are as much divided as on the musculature of the iris: some thinking that atropia paralyzes the third, and Calabar bean paralyzes the sympathetic (Bernstein, Dogiel, Rosenthal); others, that whilst atropia paralyzes the third it also excites the sympathetic (De Ruiten), and that Calabar bean, whilst it paralyzes the sympathetic, excites the third nerve, or may even have no action on the sympathetic, and simply stimulates the third (Von Graefe, Robertson, Grünhagen, Rogow). From Engelhardt's own experiments, in which, after the employment of atropia, electricity was used as a stimulus, he has arrived at the conclusion that atropia does not paralyze the fibres of the sphincter, but diminishes their excitability through its paralyzing agency on the third nerve. The action of Calabar bean from similar experiments he considers to be stimulating on the extremities of the third nerve. He is further disposed to admit the presence of a ganglionic system of nerves imbedded in the substance of the iris, situated between the radiating and concentric fibres, which acts as an inhibitory centre upon the sympathetic.—*Lancet*, Jan. 22, 1870.